Research guidance.

**This form needs to be completed by each group by Thursday 12.00. You need to answer questions 1-5. It is aimed to help you find out background information on this topic – which you can use in the final presentation. You need to answer the questions in German or English and upload them onto the wiki. You may wish to copy and paste maps into the document. You also need to cite you’re the sources you use.**

1. ***Why is there a global energy crisis on planet earth?***- Because of the population on earth  
   - how can you make the highest profit of the lowest risk?  
   -fossil fuels are used up

Own ideas

1. ***What are fossil fuels and how are they formed?****-* Fossil fuels are fuels formed by natural processes such as anaerobic decomposition of buried dead organisms. The age of the organisms and their resulting fossil fuels is typically millions of years, and sometimes exceeds 650 million years

[*http://en.wikipedia.org/wiki/Fossil\_fuel*](http://en.wikipedia.org/wiki/Fossil_fuel)

1. ***Which countries of the world have fossil fuels as their natural resources?  
   -***Fossil fuels are a natural resource – although this resource depends on geographic location. This occurs for example in enhanced oil like Russia, Norway and Saudi Arabia; there also are coals for example in Germany or China. According to local resources they are used and consumed and want to be independent as possible from the import of energy carriers. [*http://www.stromrechner-24.de/fossile-brennstoffe/*](http://www.stromrechner-24.de/fossile-brennstoffe/)
2. ***What are the major alternatives to fossil fuels? Explain in detail? Solar Energy: “***The first process is called solar thermal. This can be done without any external aids in place, such as the sun heating the water in a swimming pool or by the sun heating the stone in a home’s wall. Most often, solar panels are used to capture more of the heat from the solar energy than can be captured without the panels.

Once the [solar panels](http://poweredbysolarpanels.com/industry/home-solar-panels/) capture the heat, it is then transferred to water which flows through tubes in the panels. These tubes are called solar thermal collectors and they can circulate the heated water through a space. The heated water in turn heats the air in the space, thereby distributing the [solar power](http://poweredbysolarpanels.com/industry/solar-power-system/) throughout as heat.

The second process is the photovoltaic process and is usually what people are thinking of when the ask how does solar energy work. [Photovoltaic (PV) panels](http://poweredbysolarpanels.com/industry/pv-solar-panels/) capture the light emitted by the sun and convert this energy into usable electricity. They do this by exciting the electrons in the solar energy which produces direct current (DC) electricity.”

“Wind: “Windmills have been around for a long time, and now we have turbines using the wind’s power for electricity”

“Hydroelectric: Ever been on a powerful river? That current is strong! The river powers turbines that provide electricity. Water will keep flowing as long as the world is alive! We’re already aware of the effects of damming up a river, sometimes causing loss of homes, but it’s still a good source of energy.”

“Ocean Power: Any surfer will tell you that those waves pack a wallop! So it’s only natural that they can be used for energy. Tides make water rise and fall, and wind along the ocean surface can make waves. Wave power is already used by some lighthouses and buoys, even! Canada and France already have power plants that use the power of the tides to make electricity. A third, experimental system uses heat flow in oceans, but it’s still being researched”.

***Geothermal Power***

“Hot springs are a natural relaxation spot for many people. They can also be used for power! The steam and hot water can be used to turn turbines, and can also heat houses and buildings. Not only do you have a way to soak and relax, you have a power source, too! Sadly, not too many places in the world are prime spots for this type of power.”

***http://helloworldbea.wordpress.com/2008/04/22/top-5-fossil-fuel-alternatives/***

1. ***Draw a table and compare the advantages and disadvantages of each the alternatives to fossil fuels?***

|  |  |  |  |
| --- | --- | --- | --- |
| Advantages |  | Disadvantages | |
| Solar: No global warming | | Initial costs are very high! | |
| Clean. Once installed it is for free! | |  |  |
|  |  |  |  |
| Wind:  The wind is free | | The strength of the wind is not constant and it | |
| and with modern technology | | varies from zero to storm force. This means that | |
| it can be captured efficiently | | wind turbines do not produce the same amount | |
|  |  | of electricity all the time. There will be times | |
|  |  | when they produce no electricity at all. | |
| Geothermatical power: There is also no | | First, you cannot just build a geothermal power | |
| consumption of any type of fossil fuels. In | | Plant in some vacant land plot somewhere. The | |
| addition, geothermal energy does not output any | | Area where a geothermal energy power plant | |
| type of greenhouse effect. | | Would be built should consist of those suitable | |
|  | | Hot rocks at just the right depth for drilling. | |
|  |  |  | |
| Ocean power: wave power is a renewable energy source. Wave energy is a clean fuel. Wave energy is environmentally friendly – it doesn’t destroy the environment. There is plenty of it. Tides/waves are always predictable. |  | Harnessing the power of it is difficult. It can cost a lot of money and requires further research. If the whole tidal/wave energy scheme does get popular real estate will be losing money for beach front houses since they will be using the beaches for the tidal/wind farms. It depends where you put it for the cost so not much good financially. |  |
|  |  |  |  |
| Hydroelectric: once a dam is constructed, electricity can be produced at a constant rate. If electricity is not needed, the sluice gates can be shut, stopping electricity generation. The water can be saved for use another time when electricity demand is high.  Dams are designed to last many decades and so can contribute to the generation of electricity for many years/decades. |  | Dams are extremely expensive to build and must be built to a very high standard.  The high cost of dam construction means that they must operate for many decades to become profitable.  The flooding of large areas of land means that the natural environment is destroyed.  People living in villages and towns that are in the valley to be flooded, must move out. This means that they lose their farms and businesses. In some countries, people are forcibly removed so that hydropower schemes can go ahead. |  |
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|  |  |  |  |

http://www.greenlivinganswers.com/archives/178

http://wiki.answers.com/Q/What\_are\_the\_advantages\_and\_disadvantages\_of\_using\_the\_energy\_from\_ocean\_waves#ixzz1Zz9iIrjp

http://www.technologystudent.com/energy1/hydr2.htm

1. ***Now read through the information outlined on your own groups wiki space i.e. solar and complete the tasks about the next two days.***